mens except that the white stripe of inner orbits is more often lacking.

Males of this species in Europe have a particular, typical smell which I used as the best character for quickly distinguishing them in the field from other similar species. The American males smell just the same. Subspecies nigritarius Fabricius as the typical parasite of Bupalus piniarius is found only in or near coniferous woods. Subspecies acerbus Cresson also seems to prefer coniferous woods but is not confined to them.

Limerodops fossorius Linnaeus subsp. belangeri Cresson Q (n. comb., n. status) Amblyteles Belangeri Cresson. 1877.

The American subspecies differs from the European only slightly in the somewhat more ex-

tended black color of the end of hind tibiae, in the nearly entirely or entirely black antennae, the black scutellum and the somewhat smaller size. In the high mountain region of Bavarian Alps (Allgäu) I found however a specimen fossorius Linnaeus which agrees exactly in all these points with belangeri Cresson, except for the less extent of black color on the end of tibiae III.

At the time he described belangeri, Cresson was in doubt as to its generic position and stated in the original description that it "probably belongs to Wesmael's subgenus Limerodes," which was my own former opinion about fossorius Linnaeus. The genus Limerodops Heinrich with the species fossorius Linnaeus as type was erected and described in Mitt. Münchener ent. Ges. 35–39: 44-45. 1945–1949.

1 9 Dryden, Maine.

ENTOMOLOGY.—A revision of the turtle bugs of North America (Hemiptera: Pentatomidae). H. G. Barber and R. I. Sailer, U. S. Bureau of Entomology and Plant Quarantine.

The group of insects commonly known as turtle bugs form the tribe Podopini of the pentatomid subfamily Graphosomatinae. This tribe is composed of a rather homogeneous assemblage of genera, which look very much unlike the genera now placed in the typical tribe of the subfamily. Much additional study will be required before the relationship exhibited by the Podopini and the Graphosomatini can be properly evaluated.

As the Podopini are now known, the tribe has almost world-wide distribution in the Temperate and Tropical Zones. The tribe attains its greatest diversity in the Ethiopian Region, where 9 of the 18 recognized genera are found. Including the new genus described in this paper, there are now 6 genera in the New World. Only 4 species are known from the Neotropical Region, and of these, only 2 belong to an exclusively Neotropical genus. It seems likely that this feeble representation in the Neotropical Region is the result of inadequate collecting; other wise the matter would be one of considerable zoogeographic interest.

So far as is known, all members of the tribe live in or near marshes among the roots of clumps of grass or sedge and under debris. They may also be found in similar environments along the margins of ponds, sloughs, and streams.

In addition to the material contained in the U.S. National Museum Collection (U. S. N. M.), and that contained in the senior author's personal collection, now deposited in the U.S. National Museum, many specimens were obtained through loan from the following institutions and individuals: University of Kansas Snow Museum (U. K. S. M.) through R. H. Beamer; Ohio State University Insect Collection (O. S. U. C.) through J. N. Knull; California Academy of Sciences (C. A. S.) through R. L. Usinger and E. P. Van Duzee; Mississippi Agricultural Experiment Station (M. A. E. S. C.); Patuxent Fish and Wildlife Research Refuge, through R. T. Mitchell; and the private collection of H. M. Harris, Ames, Iowa. All drawings were made by the junior author.

### Tribe Podopini

1843. Podopides, Amyot et Serville; Hist. Nat. Insectes, Hemipteres: 56.

1851. Podopidae, Dallas; List Hempi. Ins. Brit. Mus., pt. 1: 51.

1859. Podopidae, Dohrn; Cat. Hemip.: 5.

1872. Pentatominae, Div. Podoparia, Stål, Öfv. Akad. Finska Vet. Soc. Förh. 29:34.

1884. Graphosomini, Tribe Podoparia, Jakovlev; Horae Soc. Ent. Ross. 18: 204.

1893. Graphosomidae, Lethierry and Severin, Cat. Gen. Hemip. 1: 49. (In part.)

1902. Graphosominae, Distant, Fauna Brit. India, Rhynch., 1: 70. (In part.)

1904. Graphosomidae, Van Duzee, Trans. Amer. Ent. Soc. 30: 21. (In part.)

1906. Graphosomatinae, Tribe Podoparia, Schouteden, Gen. Insectorum, fasc. 30: 28.

1908. Graphosomatinae, Bergroth, Mem. Soc. Ent. Belg. **15**: 145. (In part.)

1909. Pentatominae, Tribe Graphosomini, Kirkaldy, Cat. Hemip. 1: 34, 222.

1912. Graphosominae, Tribe Podoparia, Oshanin, Kat. palä. Hemip.: 8.

1912. Graphosominae, Tribe Podopini, Zimmer, Contr. Univ. Nebraska Dept. Ent. no. 4: 20.

1915. Graphosomatinae, Tribe Podopini, Parshley, Psyche 22: 171.

1917. Graphosomatinae, Tribe Podopini, Van Duzee, Cat. Hemip. N. Amer.: 25.

1919. Graphosomatinae, Hart, Bull. Illinois Nat. Hist. Surv. 13 (7): 166, 171.

1920. Graphosomatinae, Tribe Podopini, Stoner, Univ. Iowa Studies Nat. Hist. 8 (4): 48.

1923. Graphosomatinae, Tribe Podopini, Parshley, in Hemip. Connecticut: 754.

1926. Podopidae, Blatchley, Heterop. East. N. Amer.: 53.

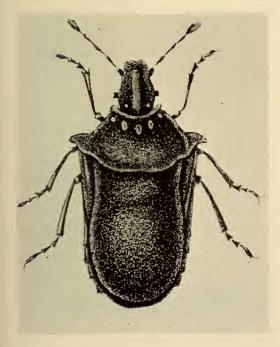


Fig. 1.—A photographic reproduction of Palisot de Beauvois's illustration of "Scutellera dubia," Insectes recueillis Afrique et en Amérique . . . pl. 5, fig. 6, 1805.

1939. Graphosomatinae, Tribe Podopini, Torre-Bueno, Ent. Amer. 19: 197.

1945. Podopidae, Brues and Melander, Class. Insects: 150.

Characters of the tribe: Scutellum enlarged, U-shaped, covering most of the abdomen and membranous part of the corium, leaving exposed a short triangular clavus and rather narrow coriaceous part of corium, the latter attenuated posteriorly, apex often extended nearly to end of scutellum; frena very short, much less than one-third the length of sutellum. Eves prominent, more or less pedunculate. Antenniferous tubercles produced, sometimes in part, at least, visible from above. Bucculae strongly elevated posteriorly. Pronotum transversely impressed near the middle; a distinct tooth or process before the rounded humeral margin; anterolateral margin either lobate, toothed, or with an elongate spinelike process; anterior disk within the cicatrices often with tuberclelike elevations. The media and subcosta of the hind wings nearly parallel at base; hamus absent. Odoriferous orifices set a little closer to the posterior coxae than to the lateral margin of the metapleura, devoid of gutters; the surrounding evaporating surfaces, roughly, irregularly corrugated. Spiracles situated much closer to the anterior than to the lateral margins of the segments. Trichobothria single, situated behind the spiracles and nearly on a line with them. Posterior lateral angles of the abdominal segments slightly nodoform.

Within the tribe there appears to be two easily recognized subdivisions. Male members of the genus *Podops* and at least three of the five New World genera (males of the remaining two not being available for study) have a movable appendage attached to the posterolateral angles of the hypopygium which is subsequently referred to as the hypopygial appendage. This appendage is known to be absent in *Scotinophara*, *Storthecoris*, *Melanophora* and *Aspidestrophus*.

## KEY TO GENERA

 Anterolateral margin of pronotum with a cylindrical spinelike process; juga flattened; anterior disk of pronotum with a tubercle in each cicatrix; a slight longitudinal carina between posterior coxae. Notopodops, n. gen.

3. Preocular margin of head with a small acute spine; juga flattened, extended to apex of tylus; cicatrices of pronotum devoid of tubercles; rostrum long, extended to venter; antenna 4-segmented...... Allopodops Harris Preocular margin of head devoid of a spine; juga flattened; cicatrices of pronotum bearing distinct tubercles; rostrum shorter, extended to intermediate coxae; antenna 5segmented.....4

4. Posterior coxae not contiguous, a short, metasternal sulcate carina between the coxae; juga much longer than tylus and contiguous before it; for the most part black

Weda Schouteden Posterior coxae contiguous or very nearly so, devoid of a metasternal sulcate carina; juga usually equally as long as the tylus or nearly so (except brevitylus and vanduzeei); fuscocinerous . . . . . . . . . . . . . . . . A maurochrous Stål

### Genus Oncozygia Stål

Oncozygia Stål, 1872, Enum. Hemip. 2: 15; Van Duzee, 1904, Trans. Amer. Ent. Soc. 30: 21; Schouteden, 1906, Gen. Insectorum, fasc. 30: 29; Kirkaldy, 1909, Cat. Hemip. 1: 231; Hart, 1919, Bull. Illinois Nat. Hist. Surv. 13 (7): 171; Blatchley, 1926, Heterop. East. N. Amer.: 54; Torre-Bueno, 1939, Ent. Amer. 19: 197; 1940, Bull. Brooklyn Ent. Soc. 35: 51.

Preocular part of head little wider than long; tylus very short, vertex raised above the level of the juga, the extended apices of which are turnidly elevated, obtuse and sometimes contiguous. Antenniferous tubercles obtuse, scarcely visible from above. Rostral sulcus deep. Antennae short, each terminal segment nearly as long as the preceding four segments combined. Thorax strongly narrowed anteriorly; obtusely impressed across the middle; anterior disk within the cicatrices devoid of tubercles; anterolateral margin with a large subquadrate, denticulate lobe which projects well beyond outer margin of eye; a short, acute tooth before the rounded humeral margin.

The serrately margined, membranous flap which is attached basally to the inner face of the clasper and extends palmately from the two arms seems characteristic of this genus (see Fig. 21).

Type, O. clavicornis Stål (only included species).

## Oncozygia clavicornis Stål Figs. 4, 18, 21, 22, 23

Oncozygia clavicornis Stål, 1872, Enum. Hemip. 2: 15; Van Duzee, 1904, Trans. Amer. Ent. Soc.

30: 23; Schouteden, 1906, Gen. Insectorum, fasc. 30: 30, pl. 3, fig. 12; Blatchley, 1926, Heterop. East. N. Amer.: 54; Torre-Bueno, 1939, Ent. Amer. 19: 197.

Small, not over 5 mm long; black, shining, rather closely and coarsely punctate; covered with decurved, appressed, cereous, clavate, often abraded hairs. Rostrum short, extending just past anterior coxae.

Outline of head and pronotum as in Fig. 4. Hypopygium, hypopygial appendage, claspers, and aedeagus as in Figs. 22, 23, 21, 18.

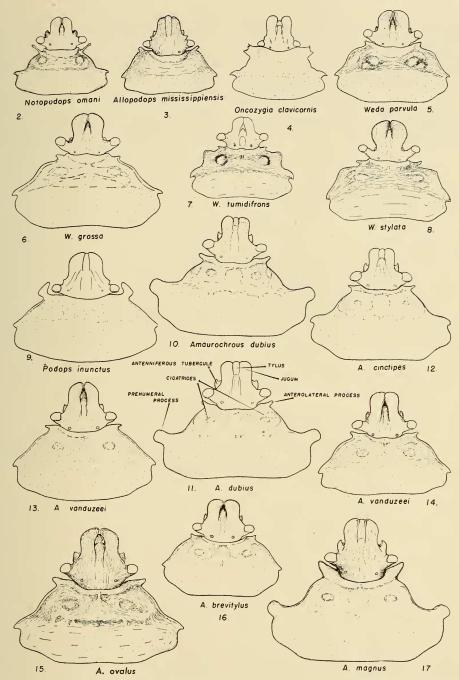
Stål described *clavicornis* from Texas. Since then it has been recorded from Fortress Monroe, Va., and from Ashby, Fla., by Torre-Bueno. The Vancouver, British Columbia, record cited by Hart is probably based on a misidentification.

Specimens have been examined from the following localities: Virginia: Fortress Monroe; South Carolina: Myrtle Beach (U.S.N.M.); Florida: Lake Placid (U.K.S.M.); Mississippi: Biloxi (M.A.E.S.C.), Wiggins (H. M. Harris Coll.); Texas: Galveston (U.S.N.M.), Gillespie County (O.S.U.C.).

O. clavicornis Barber (not Stål), 1906, was a mixed series one specimen of which is described under the following new genus.

### Notopodops, n. gen.

Head much wider across eyes than long; eyes distinctly stylated; juga longer than tylus and contiguous before it; antenniferous tubercle with a prominent, stout, incurved, subacute process, this entirely visible from above; disk of vertex strongly elevated in a ridge which is continued anteriorly on the base of tylus, anteriorly, rather abruptly declivous. Antennae short, but little longer than the head. Rostrum short. Pronotum much wider than long, with two deep transverse impressions, the first somewhat remote from anterior margin, the second near the middle region, surface between these strongly elevated, more so in the center and provided on either side within the cicatrices with a prominent, rounded tubercle; lateral margins not explanate, lightly impressed for a short distance before the lateral sinus; just behind anterior angles armed with a slender, cylindrical, oblique, apically blunt process; prehumeral tooth not prominent. Outline of head and pronotum as shown in Fig. 2. Scutellum not twice as long as wide; surface deeply, obliquely impressed on each side from the basal angles. Connexivum narrowly exposed. Meta-



Figs. 2-17.—Dorsal views of the heads and pronota: 2, Notopodops omani, n. sp. (holotype); 3, Allopodops mississippiensis Harris and Johnston (Falls Church, Va.); 4, Oncozygia clavicornis Štål (Myrtle Beach, S. C.); 5, Weda parvula (Van Duzee) (Fort Collins, Colo.); 6, W. grossa, n. sp. (holotype); 7 W. tumidifrons, n. sp. (holotype); 8, W. stylata, n. sp. (holotype); 9, Podops inunctus (F.) (Toulouse, France); 10, Amaurochrous dubius (P. de B.) (Cuba); 11, A. dubius (P. de B.) (Lake Placid, Fla.); with parts commonly mentioned in description labeled; 12, A. cinctipes (Say) (Staten Islend, N. Y.); 13, A. vanduzeei, n. sp. (holotype); 14, A. vanduzeei, n. sp. (Los Angeles, Calif.); 15, A. ovalis, n. sp. (holotype); 16, A. brevitylus, n. sp. (holotype); 17, A. magnus, n. sp. (holotype). (All drawn to the same scale.)

sternum between the posterior coxae provided with a slight, longitudinal, nonsulcate carina. Legs short and stout.

Type: Notopodops omani, n. sp.

Notopodops is related to Weda and is chiefly distinguished by the nonexplanate lateral margins of the pronotum, the spinelike anterolateral process of the pronotum, short antennae, and the nonsulcate metasternal carina.

# Notopodops omani, n. sp. Fig. 2

Oncozygia clavicornis, Barber (not Stål), 1909, Sci. Bull. Mus. Brooklyn Inst. Arts, Sci. 1: 256 (in part).

Length female, 4 mm. Dull black, arenose, narrow lateral margin of the scutellum, anteriorly and inner field of the corium, testaceous yellow; basal and terminal segments of the antennae fuscous, second, third, and fourth as well as most of the rostrum testaceous; legs fuscous, tibia in the middle region and the tarsi brown. Punctures on the dorsal and ventral surfaces rather fine and rather closely placed, each beset with a fine, short, cereous hair, in part forming incrustations; inner field of the corium more coarsely and sparsely punctate.

Head, one-fifth wider across eyes than long, somewhat declivous, lateral margins before the anterior, deflexed portion nearly parallel for some distance, thence abruptly rounded toward apices of juga which meet before apex of tylus; the acute process of the antenniferous tubercles extends anteriorly almost to middle of the preocular part of head. Antennae with the basal segment moderately incrassate, somewhat longer than the second and third combined, third and fourth subequal, terminal rather strongly incrassate, almost equal to the three preceding segments combined. Rostrum almost attaining middle point of the mesosternum. Pronotum nearly twice as wide across posterior lobe as long. Outline of head and pronotum as in Fig. 2. Scutellum nearly one-third longer than wide, margins parallel anteriorly for a short distance thence slightly expanded, widest across middle region; apex not quite reaching end of abdomen; disk at base somewhat elevated, followed posteriorly by a more or less distinct carina which becomes evanescent posteriorly. Connexivum narrowly exposed. Male unknown.

Holotype: Female, Boca Chica, Cameron County, *Texas*, May 30, 1933, P. W. Oman, U.S.N.M. type no. 61516. Paratype: Female,

Esperanza Ranch, Brownsville, Tex., C. Schaeffer, from the senior author's collection.

Named in honor of Paul W. Oman, who has collected many interesting Hemiptera from the western States.

### Genus Allopodops Harris and Johnston

Allopodops Harris and Johnston, 1936, Iowa State College Journ. Sci. 10: 377; Torre-Bueno, 1940, Bull. Brooklyn Ent. Soc. 35: 51, 52.

Obtuse apex of tylus extended slightly beyond apices of juga; eyes somewhat pedunculate; a small, acute marginal process just before the eye; antenniferous tubercles visible from above, very slightly produced outwardly. Antennae 4-segmented. Ocelli but little further apart than each is removed from an eye, set close to anterior margin of pronotum, well behind a line drawn across posterior margins of eyes. Rostrum long, extended on to the venter. Pronotum with the lateral margins nearly straight, anteriorly, finely serrate behind the sinuatotruncate process at the anterior angle; devoid of prominent tubercles within the cicatrices. Devoid of a metasternal carina between the coxae.

Type: Allopodops mississippiensis Harris and Johnston (only included species).

# Allopodops mississippiensis Harris and Johnston Fig. 3

Allopodops mississippiensis Harris and Johnston, 1936, Iowa State College Journ. Sci. 10:378, pl. 1; Torre-Bueno, 1940, Bull. Brooklyn Ent. Soc. 35:52.

Length 5 mm. Black, sparsely pilose. The small acute preocular process, position of the ocelli, 4-segmented antennae, longer rostrum and serrated lateral margins and the character of the anterior pronotal angles distinguish this species from any other member of the tribe. Outline of head and pronotum as in Fig. 3.

This species was described from a single female collected at Wiggins, Miss.

Two additional specimens have been found in the collection of the United States National Museum: A female from Jocassee, South Carolina, June 25, 1935, O. L. Cartwright, and a male (hypopygium missing) from Falls Church, Virginia, November 8, 1943, collected on sedge by F. Andre.

#### Genus Weda Schouteden

Weda Schouteden, 1905, Ann. Soc. Ent. Belg. 49:
 150; 1906, Gen. Insectorum, fasc. 30: 42; Bergroth, 1908, Mem. Soc. Ent. Belg. 15: 147;

Hart, 1919, Bull. Illinois Nat. Hist. Surv. 13
(7): 171; Torre-Bueno, 1939, Ent. Amer. 19: 197, 198; 1940, Bull. Brooklyn Ent. Soc. 35: 51.

Most closely related to the genus Amaurochrous. It differs chiefly by the characteristic black coloration, juga longer than tylus and more contiguous anteriorly, lateral margins of pronotum usually more expanded and reflexed. Most notable difference is the presence of a sulcate metasternal carina between the hind coxae.

Type: (Weda horvathi Schouteden) = Weda parvula (Van Duzee) (only included species).

#### KEY TO SPECIES OF WEDA

the vertex and base of tylus, viewed laterally, scarcely depressed in the middle stylata, n. sp. 3. Head and pronotum subequal; lateral margins

of head nearly straight and parallel; anterior and posterior lobes of pronotum subequally long; dull black; length 5 mm or less

Weda parvula (Van Duzee), n. comb. Figs. 5, 19, 24, 25, 26

Podops parvulus Van Duzee, 1904, Trans. Amer. Ent. Soc. 32: 22 (part).

Weda horvathi Schouteden, 1905, Ann. Soc. Ent. Belg. 44: 145; 1906, Gen. Insectorum, fasc. 30: 43; Bergroth, 1908, Mem. Soc. Ent. Belg. 15: 147.

The following references to parvulus Van Duzee are erroneous and apply to Amaurochrous brevitylus, n. sp.:

Podops parvulus Van Duzee, 1904, Trans. Amer. Ent. Soc. 32: 22 (part); Parshley, 1923, in Hemip. Connecticut: 755; Blatchley, 1926, Heterop. East. N. Amer.: 55-57; Torre-Bueno, 1939, Ent. Amer. 19: 198.

Amaurochrous parvulus, Schouteden (not Van Duzee), 1906, Gen. Insectorum, fasc. 30:33.

Length 5 mm. Dull black, densely punctate. Corium fuscotestaceous, very narrow margin of the connexivum, first three segments of antennae, rostrum and tarsi testaceous. Head nearly one-fourth wider across eyes than long; preocular lateral margins subparallel anteriorly; antenniferous tubercles slightly visible from above. Antennae with first, third, and fourth segments subequal, second segment shortest, somewhat shorter than basal, terminal segment but little shorter than the three preceding segments combined. Pronotum across humeral margins twice as wide as long; the acute process at anterior angle not extended beyond line of eyes; disk strongly, transversely impressed just before middle and also a little behind anterior margin; a distinctly elevated tubercle in each cicatrix; lateral margins lightly expanded, gently, convexly arcuate before the shallow, lateral sinus. thence very nearly straight to apex of acute prehumeral tooth, the latter extended but slightly beyond humeral margin. Outline of head and pronotum as in Fig. 5. Scutellum about one-third longer than wide, lateral margins nearly parallel anteriorly.

Hypopygium, hypopygial appendage, clasper and aedeagus as in Figs. 25, 26, 24, 19.

Podops parvulus Van Duzee, 1904, was described from a mixed series; however, the description was actually based on "a pair taken in Colorado." These have proved to belong to the species Schouteden described a vear later as horvathi and which he made genotype of his new genus Weda. His specimens also came from Colorado. It therefore follows that horvathi Schouteden, 1905, must fall as a synonym of parvulus Van Duzee, 1904; however, parvulus must be transferred to Schouteden's genus Weda. The specimens from Montreal, Canada, Woods Hole, Mass., and Lawrence, Kans., which were also identified by Van Duzee as parvulus, belong to the genus Amaurochrous and must be described as a new species (see A. brevitylus, n. sp.). Schouteden's excellent figure, plate 3, figure 13, in the Genera Insectorum, mistakenly identified as parvulus Van Duzee, also pertains to this same new species of Amaurochrous.

A specimen belonging to the E. P. Van Duzee Collection, now deposited in the California Academy of Sciences, has been designated lectotype. It is a female labeled "Podops parvula Van Duzee, from Col. No. 238." Other specimens examined include 3 labeled "Col."; 2, Fort Collins, and 2

Manzanola, *Colorado* (in Colorado Exp. Stat. Coll.); 2, "Col.," No. 238 (Osborn Coll., deposited in A.S.U.C.); 2, Fort Collins, Colo., and 1 from Brigham, *Utah* (U.S.N.M.).

## Weda tumidifrons, n. sp. Figs. 7, 30, 31, 32

Oncozygia clavicornis, Barber (not Stål), 1906, Sci. Bull. Mus. Brooklyn Inst. Arts, Sci. 1: 256 (in part).

Length 4 mm. Somewhat smaller than the two preceding species but of the same general fuscous coloration; corium testaceous. Head nearly one-fourth wider than long; lateral margins gently diverging before the strongly stylated eyes; antenniferous tubercles but very slightly visible from above; seen from the side, strongly elevated on the vertex and on the base of the tylus, lightly depressed between the two tumidlike elevations. Antennae as long as width of head across eyes, basal segment twice as long as second, a little longer than third, fourth one-fifth shorter than third and the terminal equal to the three preceding segments united. Apex of rostrum reaching to middle point of the intermediate coxae. Pronotum almost twice as wide across posterior lobe as long; acute process at anterior angle quite short, not extending outward as far as outer margin of eye; disk strongly impressed across the middle, anterior transverse impressions shallow, set closer to anterior margin than in parvula; tubercles in the cicatrices strongly elevated; expanded lateral margin anteriorly, strongly, convexly arcuate, sublobate before the lateral sinus; prehumeral tooth subacute, projecting a little beyond the humeral margin. Outline of head and pronotum as in Fig. 7.

Hypopygium, hypopygial appendage, and clasper as in Figs. 31, 32, 30.

Holotype: Male, Plano, Texas, July 1907, E. S. Tucker, U.S.N.M. type no. 61517. Paratypes: Texas: male, Esperanza Ranch, Brownsville, C. Schaeffer; male and female, College Station, April 8, 1928, H. G. Johnston; and May 20, 1928, J. C. Gaines; female, College Station, July 19, 1932, J. C. Gaines; Colorado: Boulder, November 5, 22, R. Shotwell; from the senior author's collection.

Distinguished from the preceding species by the two tumidescent elevations on the head and the sublobate anterolateral margin of the pronotum.

# Weda stylata, n. sp. Figs. 8, 27, 28, 29

Length 5.45 mm. Fuscous; coloration of parts much the same as in the three preceding species. Head a little wider than long; lateral margins before the strongly stylated eves somewhat flaring anteriorly; preocular part of head half as long as entire head; antenniferous tubercles scarcely visible from above. Antennae but little longer than width of head; second segment about one-third shorter than basal, third one-fourth shorter than second, fourth but little shorter than third and the terminal somewhat shorter than the three preceding segments united. Apex of rostrum reaches to intermediate coxae. Pronotum not nearly twice as wide across posterior lobe as long; acute process at anterior angle extending outwardly but little beyond outer margin of eye; disk transversely impressed a little before the middle; anterior impression forming a shallow gutter; the anterior margin somewhat reflexed; expanded lateral margins before the sinus very strongly convexed, or obtusely angled, thence slightly, concavely arcuated opposite the median transverse impression; prehumeral process obtuse, projecting but slightly beyond the humeral margin. Outline of head and pronotum as in figure 8. Scutellum almost one-third longer than wide, obsoletely, longitudinally carinate in the middle.

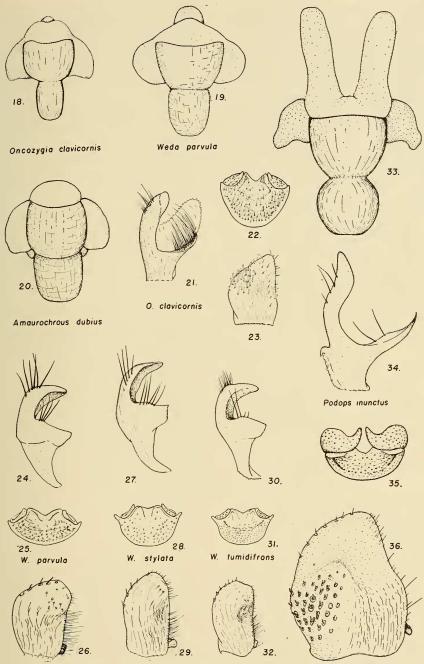
Hypopygium, hypopygial appendage, and clasper as in Figs. 28, 29, 27.

Holotype: Male, Salton, *California*, March 29, H. G. Hubbard, and paratype male from the same locality, March 26 (U.S.N.M. type no. 61518); paratype female, Coachella, Calif., May 21, 1928, E. P. Van Duzee (C.A.S.).

Most closely related to tumidifrons, but somewhat larger than that species. The preocular part of the head is relatively longer, lateral margins more flaring anteriorly; antenniferous tubercles scarcely visible from above; process at the anterior angle of pronotum longer and the lateral margins more shallowly sinuate opposite the median transverse impression.

# Weda grossa, n. sp. Fig. 6

Length 6.40 mm. Black, shining; antennae, rostrum and tarsi testaceous. Head wider across eyes than long; eyes strongly stylated; lateral margins strongly sinuate before eyes thence grad-



Figs. 18-36.—18, Oncozygia clavicornis Stål (Myrtle Beach, S. C.), aedeagus; 19, Weda parvula (Van Duzee) (Fort Collins, Colo.), aedeagus; 20, Amaurochrous dubius (P. de B.) (Lake Placid, Fla.), aedeagus, 21, Oncozygia clavicornis Stål (Myrtle Beach, S. C.), right clasper; 22, same, posterior view of hypopygium; 23, same, dorsal view of right hypopygial appendage; 24, Weda parvula (Van Duzee) (Fort Collins, Colo.), right clasper; 25, same, posterior view of hypopygiul; 26, same, dorsal view of right hypopygial appendage; 27, W. stylata, n. sp. (paratype, Salton, Calif.), right clasper; 28, same, posterior view of hypopygium; 29, same, dorsal view of right hypopygial appendage; 30, W. tumidifrons, n. sp., right clasper; 31, same, posterior view of hypopygium; 32, same, dorsal view of hypopygiul appendage, 33, Podops inunctus (F.) (Toulouse, France), aedeagus; 34, same, right clasper; 35, same, posterior view of hypopygium; 36, same, dorsal view of hypopygial appendage. (All homologous parts drawn to the same scale.)

ually expanding to the broadly rounded apices of juga, each appearing somewhat spatulate anteriorly; juga coarsely and closely punctate; antenniferous tubercles short, entirely visible from above; bucculae strongly expanded posteriorly, lower margins broadly rounded. Antennae with the first and third segments subequal, second about one-fourth shorter than first and subequal to fourth, terminal segment as long as the two preceding segments united. Rostrum short, reaching only to anterior coxae. Pronotum twice as wide as long; subacute process at each anterior angle short, not extended outwardly as far as outer margin of the eye; prehumeral processes subacute, well projected beyond the rounded humeral margins; lateral margin before each process lightly expanded and narrowly reflexed, the lateral sinus rather shallow; disk before the median transverse impression coarsely punctate. Outline of head and pronotum as shown by figure 6. Scutellum nearly one-third longer than wide, rather coarsely and evenly punctate, especially towards base.

Holotype: Female, Mazatlán, Sinaloa, *Mexico*; U.S.N.M. type no. 61519.

Much larger and appearing more polished than any other known species of the genus. Head more strongly sinuate before the eyes than in *parvula*; antenniferous tubercles short, more obtuse; anterolateral process shorter and blunter.

#### Genus Amaurochrous Stål

Podops, subgenus Amaurochrous Stål, 1872, Enum. Hemip. 2:15.

Amaurochrous Schouteden, 1905, Gen. Insectorum, fasc. 30: 32; Kirkaldy, 1909, Cat. Hemip. Heterop. 1, Cimicidae: 237; Zimmer, 1912, Contr. Dept. Ent. Univ. Nebraska, no. 4: 20; 1912, Univ. Nebraska Studies 11: 238; Van Duzee, 1917, Cat. Hemip. N. Amer.: 26 (subgen.); Hart, 1919, Bull. Illinois Nat. Hist. Surv. 13 (7): 171; Barber and Bruner, 1932, Journ. Dept. Agr. Puerto Rico 16: 246.

Scotinophara Stål, 1867, Öfv. Vet.-Akad. Förh. 24:523.

Podops Uhler, 1878, Proc. Boston Soc. Nat. Hist. 19: 368; 1886, Check List Hemip. Heterop.: 5; Lethierry and Severin, 1893, Cat. Gen. Hemip; 1: 55; Van Duzee, 1904, Trans. Amer. Ent. Soc. 30: 21, 22; Bergroth, 1908, Mem. Soc. Ent. Belg. 15: 146; Banks, 1910, Cat. Nearctic Hemip. Heterop.: 92; Parshley, 1915, Psyche 12: 171; Parshley, 1923, in Hemip. Connecticut: 755; Blatchley, 1926, Heterop. East. N. Amer.: 54; Torre-Bueno, 1939, Ent. Amer. 19: 197; 1940, Bull. Brooklyn Ent. Soc. 35: 51.

Fuscocinereous. Head shorter than pronotum. Antennae each 5-segmented, with a tendency for fusion of the second and third segments. Anterolateral angle of the pronotum produced in a short subacute tooth or an elongate hornlike process which in some species extends well beyond outer margin of the eye; prehumeral process subacute to obtusely rounded at apex; lateral margin of pronotum concavely sinuate (except brevitylus and vanduzeei); well-developed tubercles in the cicatrices. Hypopygeal appendages widely separated, not overlapping the deep, concave, median sinus on the hind margin of the hypopygial cup.

Type: Amaurochrous dubius (Palisot de Beauvois) (designated by Schouteden in 1905).

As indicated in the bibliography above, there has been considerable disagreement among past authors as to the position of Amaurochrous. Some recent writers have gone so far as to treat the name as a synonym of *Podops* Laporte, 1832. Superficially the species belonging to these genera do show a close similarity; however, closer scrutiny quickly reveals important differences. The shape of the process at each anterolateral angle is noticeably different. In *Podops* it is flattened and spatulate, in Amaurochrous it is conical or tuberculate (comp. Figs. 9 and 10). Striking differences are apparent in the male genitalia. With minor variations the claspers of all species of Amaurochrous conform to the pattern exhibited by the genotype dubius (Fig. 49) which is quite different from *Podops inunctus* (Fabricius) (Fig. 34). The bilobed dorsal vesicula of the aedeagus (Fig. 33) and very much enlarged hypopygeal appendages (Fig. 36) of P. inunctus are also unlike the homologous structures of A. dubius and its related species.

### KEY TO SPECIES OF AMAUROCHROUS

to subacute, extended but little, if at all, beyond humeral margin (Fig. 12)

cinctipes (Say)

Anterolateral tooth of pronotum stout, extended a little beyond outer margin of eye; prehumeral process forming a broadly rounded lobe projecting well beyond humeral margin (Fig. 10)

dubius (Palisot de Beauvois) 4. Lateral margin of pronotum distinctly concavely sinuate in the middle (Fig. 15)

ovalis, n. sp.

Lateral margin of pronotum fairly straight, scarcely concavely sinuate (Figs. 13 and 16).5

5. Anterolateral tooth of pronotum scarcely extended as far as outer margin of eye; antennae shorter, but little longer than pronotum; ocelli less widely separated (Eastern and Middle West) (parvulus of most authors)

brevitulus, n. sp.

Anterolateral tooth extended a little beyond outer margin of eye; antennae much longer than pronotum; ocelli more widely separated (California) . . . . . . . . . . vanduzeei, n. sp.

## Amaurochrous dubius (Palisot de Beauvois) Figs. 1, 10, 11, 20, 49, 50, 51

Scutellera dubia Palisot de Beauvois, 1805, Ins. Afr. Amer.: 33, pl. 5, fig. 6 (reproduced on our

Podops (Amaurochrous) dubius, Stål, 1872, Enum. Hemip. 2: 15; Van Duzee, 1917, Cat. Hemip.

N. Amer.: 26 (part).

Amaurochrous dubius, Schouteden, 1905, Gen. Insectorum, fasc. 30: 33; Kirkaldy, 1909, Cat. Hemip. Heterop. 1, Cimicidae: 237; Bruner and Barber, 1949, Mem. Soc. Cubana Hist. Nat. 19:

Podops peninsularis Blatchley, 1924, Ent. News 35: 87; 1926, Heterop. East. N. Amer.: 55, 56; Torre-Bueno, 1939, Ent. Amer. 19: 198. NEW SYNONYMY.

This has the same general appearance and size as cinctipes but differs in the following respects: The anterolateral tooth of the pronotum is stouter and extended somewhat beyond the outer margin of the eye; the prehumeral process is broadly rounded or lobate and extended well beyond the humeral margin, and preceded by a more strongly concave sinus (compare outlines of the heads and pronota as shown in Figs. 10 and 12).

Palisot de Beauvois described dubius from San Domingo; Stål reported the species from Cuba. Specimens have been examined from Cuba, Florida, and Louisiana. In addition, the U.S. National Museum collection contains a number of specimens from Mexico and Central America intercepted in cargoes of bananas.

Blatchley, 1926, described peninsularis from

Florida. A paratype in the collection of the U.S. National Museum agrees with what we have determined as dubius from Cuba and Florida. In our opinion Blatchley was in error both in his description (pp. 55-56) and in his identification (Fig. 11) of Palisot de Beauvois' species; in consequence he redescribed the true dubius as peninsularis. A photographic reproduction of Palisot de Beauvois's illustration of dubius is shown on Fig. 1.

There is some reason to question the status of cinctipes as a species distinct from dubius. Certain specimens of dubius from Mexico and several specimens from Texas which we identify as cinctipes tend to intergrade. It may be that additional material collected along the zone where dubius overlaps with cinctipes will show cinctipes to be a subspecies of dubius. This opinion is further supported by the slight degree of difference exhibited by the claspers and hypopygial appendages of the two species (compare Figs. 49, 50 and 40, 42).

# Amaurochrous cinctipes (Say)

Figs. 12, 40, 41, 42

Tetyra cinctipes Say, 1828, Amer. Ent. 3: 94, pl. 43; LeConte, 1859, Compl. Writ. Say 1: 94, pl. 43, fig. 4.

Scotinophara cinctipes, Stål, 1867, Öfv. Vet.-Akad. Förh. 24: 502.

Podops (Amaurochrous) cinctipes, Stål, 1872, Enum. Hemip. 2: 15; Van Duzee, 1917, Cat. Hemip. N. Amer.: 26; Leonard, 1928, List Insects New York: 78.

Amaurochrous cinctipes, Olsen, 1912, Journ. New York Ent. Soc. 20: 49.

Podops cinctipes, Uhler, 1886, Check List Hemip. Heterop.: 5; Lethierry and Severin, 1893, Cat. Gen. Ĥemip. 1: 56; Van Duzee, 1894, Bull. Buffalo Soc. Nat. Sci. 5: 170; 1904, Trans. Amer. Ent. Soc. 30: 22; Torre-Bueno, 1907, Ent. News 18: 441; 1908, Journ. New York Ent. Soc. 16: 226; Banks, 1910, Cat. Nearctic Hemip. Heterop. 92; Zimmer, 1912, Univ. Nebraska Ŝtudies 11: 238; 1912, Contr. Dept. Ent. Univ. Nebraska no. 4: 20; Stoner, 1915, Ent. News 27: 355; Parshley, 1915, Psyche 22: 171; 1917, Occ. Pap. Boston Soc. Nat. Hist. 7:6; Stoner, 1917, Bull. Lab. Nat. Hist. Univ. Iowa 7: 6; Parshley, 1923, Can. Ent. 45: 69-70, figs. 1, 2 (ecology); 1923, in Hemip. Connecticut: 755; Blatchley, 1926, Heterop. East. N. Amer.: 55; Brimley, 1938, Insects North Carolina: 61; Torre-Bueno, 1939, Ent. Amer. 19: 198.

Podops peninsularis, Torre-Bueno (not Blatchley), 1939, Bull. Brooklyn Ent. Soc. 34: 214.

Length 5-7.5 mm. Head across eyes much wider than long; preocular portion, viewed dor-

sally, subequal to remainder; tylus and juga equally long; antennae nearly one-fourth longer than head; first four segments nearly equal, fifth but little longer than the preceding two segments combined. Pronotum across humeri over twice as wide as long, a little longer than head; lateral margin very narrowly impressed and reflexed; anterolateral tooth acute, extended outward almost to outer margin of eye; prehumeral process subacute to narrowly obtusely rounded at apex, extended but little beyond humeral margin, lateral margin before this rather strongly concavely sinuate. Outline of the head and pronotum as shown by Fig. 12. Scutellum over twice . as long as pronotum, one-fourth longer than head and pronotum combined.

Distribution: Eastern North America from Quebec and the New England States south to the Carolinas and west to Minnesota, Nebraska, Kansas, Missouri, and extending south into Louisiana and Texas.

Two specimens in the collection of the U.S. National Museum, which bear the label "along Black R., 3 mi. so. of Carlsbad Cave, N. Mex.," apparently belong here although the genital structures are not exactly typical of the species.

Hypopygium, hypopygial appendages, and clasper as in Figs. 41, 42, 40.

As noted in the discussion under A. dubius, there is some reason to believe that cinctipes is actually no more than a subspecies of dubius. Certainly the differences distinguishing these two species are not of the same order as those which distinguish them from the other species of the genus.

## Amaurochrous brevitylus, n. sp.

Figs. 16, 37, 38, 39

Podops parvulus Van Duzee, 1904, Trans. Amer. Ent. Soc. 30: 22 (part); Bergroth, 1908, Mem. Soc. Ent. Belg. 15: 146; Banks, 1910, Cat. Nearc. Hemip. Heterop.: 93; Zimmer, 1912, Contr. Dept. Ent. Univ. Nebraska no. 4: 20; Stoner, 1917, Bull. Lab. Nat. Hist. Univ. Iowa 7: 6; Parshley, 1923, in Hemip. Connecticut: 755; Blatchley, 1926, Heterop. East. N. Amer.: 55– 57; Torre-Bueno, 1939, Ent. Amer. 19: 198.

Amaurochrous parvulus, Schouteden (not Van Duzee), 1906, Gen. Insectorum, fasc. 30: 33, pl. 2, fig. 13; Hart, 1919, Bull. Illinois Nat. Hist. Surv. 13 (7): 171.

Amaurochrous dubius, Olsen (not Palisot de Beauvois), 1912, Journ. New York Ent. Soc. 20: 50.

Length 5.30-5.80 mm. Head distinctly wider, across eyes, than long; preocular part distinctly

longer than remainder; juga distinctly longer than tylus, usually not contiguous anteriorly; lateral margin slightly concave before stylated eyes. Antenna with basal segment a little longer than second, the latter subequal to the third and fourth, fifth very nearly equal to the preceding three segments combined. Pronotum about twice as wide as long; lateral margin very nearly straight, anterolateral tooth of pronotum acute, scarcely extended beyond outer margin of eve: prehumeral process forming an obtuse tooth. Outline of head and pronotum as shown in Fig. 16. Scutellum about one-third longer than wide, over twice as long as head and pronotum com-

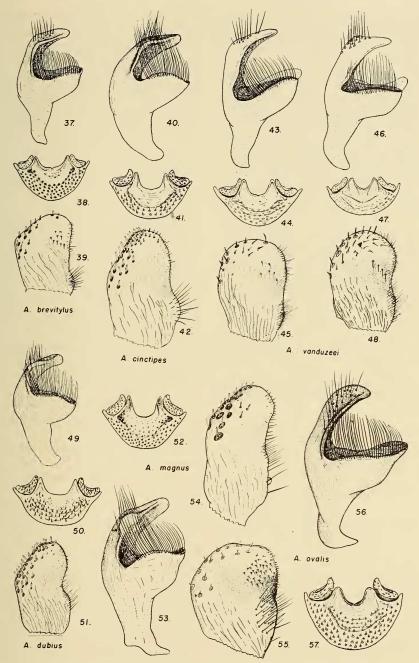
Hypopygium, hypopygial appendage, and clasper as in Figs. 38, 39, 37.

Type: Male, Massachusetts: Waterton, June 28, 1920, C. C. Sperry, U.S.N.M. type no. 61520. Paratypes, males and females: 1, Andover, ex P. R. Uhler collection. New York: 1, Northwest, L. I., June 14, 1949, Roy Latham; 1, Orient, L. I., May 28, 1932, Roy Latham. New Jersey: 1, Paterson, May 3, 1903, H. G. Barber. Wisconsin: 1, Madison, June 1, 1949, student collection. Minnesota: 1, Park Rapids, July 24, 1935, P. W. Oman. Iowa: 2, Lake Okoboji, June 25, 1916; 4, July 1916, L. Buchanan; 1, July 8, 1916, O. Stoner; Ames, July 5, 1932, H. M. Harris; 1, Solon, May 17, 1915, L. Buchanan; 1, Esterville, June 5, 1916, L. Buchanan. Nebraska: 1, Sand Hills, July, H. G. Barber. Kansas: 3, Topeka, May 30, Popenoe; 1, "Kan."; 2, Douglas County, 900 feet, F. H. Snow; 1, October 9, 1946. Arizona: Mount Lemon, April 29, 1948, R. H. Beamer.

Fourteen of the paratypes listed above are in the U. S. National Museum collection; four are in the Snow Insect Collection of the University of Kansas; one, in the University of Wisconsin Collection; and one is in the private collection of H. M. Harris.

## Amaurochrous vanduzeei, n. sp. Figs. 13, 14, 43-48

Length 6-7 mm. Head across eyes nearly onethird wider than long; juga longer than tylus, and often contiguous before it. Antenna with second segment shorter than the basal, third a little longer than fourth and the fifth equal to third and fourth combined. Pronotum twice as wide as long; anterolateral tooth acute, extending directly outward a little beyond outer margin of eye; lateral margin very nearly straight; pre-



Figs. 37-54.—37, Amaurochrous brevitylus, n. sp. (paratype, Sand Hills, Nebr.), right clasper; 38, same, posterior view of hypopygium; 39, same, dorsal view of hypopygium; 40, A. cinctipes (Say) (Staten Island, N. Y.), right clasper; 41, same, posterior view of hypopygium; 42, same, dorsal view of hypopygial appendage, 43, A. vanduzeei, n. sp. (paratype, Bay Farm Island, Alameda County, Calif.), right clasper; 44, same, posterior view of hypopygium; 45, same, dorsal view of hypopygial appendage; 46, A. vanduzeei, n. sp. (paratype, Los Angeles, Calif.), right clasper; 47, same, posterior view of hypopygium; 48, same, dorsal view of hypopygial appendage; 49, A. dubius (P. de B.) (Lake Placid. Fla.), right clasper; 50, same, posterior view of hypopygium; 51, same, dorsal view of hypopygial appendage; 52, A. magnus, n. sp. (paratype, Florida, ex Uhler coll.); 52, same, posterior view of hypopygium; 53, same, right clasper; 54, same, dorsal view of hypopygial appendage; 55, A. ovalis, n. sp. (holotype); 55, same, dorsal view of hypopygial appendage; 56, same, right clasper; 57, same, posterior view of hypopygium.

humeral process narrowly rounded, extending but little beyond humeral margin. Outline of head and pronotum as shown by figure 13. Scutellum about one-third longer than wide.

Hypopygium, hypopygial appendage and clasper as in figures 44, 45, and 43.

Type: Male, Bay Farm Island, Alameda County, California, February, 25, 1939, K. S. Hagen (C.A.S.). Paratypes: 12 males and 18 females with the same data as type; male and 2 females, same locality, November 11, 1938, W. F. Barr; male and female, Millbrae, Calif., August 25, 1918, E. P. Van Duzee (C.A.S.). Five male and 5 female paratypes agreeing with the type are retained for the U.S.N.M. collection; male, Los Angeles, Calif., Coquillett (U.S.N.M.).

This species is most closely related to brevitylus, new species, but averages larger than that species; the antennae are longer in relation to the length of the pronotum. In addition there are constant differences in the genital structures. The male from Los Angeles County differs in certain respects from the form represented by the type. The most noticeable difference is in the shape of the head. (Compare Figs. 13 and 14.) Close similarity of the genital structure is accepted as evidence that only one species is involved. (See Figs. 43–48.)

# Amaurochrous ovalis, n. sp. Figs. 15, 55, 56, 57

Length 7-8.00 mm. Head about one-third wider across than long; juga, coarsely, closely punctate, much longer than tylus but scarcely contiguous before it, bluntly rounded at apices. Antenna with the basal and second segments subequal, third a little longer than second and subequal to fourth, terminal segment somewhat shorter than third and fourth combined. Pronotum very nearly twice as wide across humeri as long, but little longer than head; anterolateral tooth rather stout, subacute, extending directly outward a little beyond outer margin of eyes; prehumeral process subacute, well extended beyond humeral margin; lateral margin narrowly pressed, marginal sinus rather shallow. Outline of head and pronotum as shown in Fig. 15. Scutellum about one-third longer than wide, not quite reaching apex of abdomen.

Hypopygium, hypopygial appendage, and clasper as in figs. 57, 55, 56.

This is a larger species than *cinctipes* with the body appearing somewhat oval in outline.

Type: Male, Clemson College, South Carolina, June 26, 1932, O. L. Cartwright, U.S.N.M. type no. 61521. Paratypes: 2 females, Mrytle Beach, S. C., April 23, 1919, E. R. Kalmbach (U.S.N.M.) Benson, North Carolina, August 9, 1934, R. H. Beamer (U.K.S.M.); Myrtle Beach, S.C., April 22, 1919, Patuxent Fish and Wildlife Refuge Laboratory, through R. T. Mitchell.

# Amaurochrous magnus, n. sp. Figs. 17, 52, 53, 54

Podops dubius, Van Duzee (not Palisot de Beauvois), 1904, Trans. Amer. Ent. Soc. 30: 77; Blatchley, 1926, Heterop. East. N. Amer.: 55–56, fig. 11.

Amaurochrous dubius, Barber (not Palisot de Beauvois), 1914, Bull. Amer. Mus. Nat. Hist. 33: 521; Hart, 1919, Bull. Illinois Nat. Hist. Surv. 13 (7): 172; Barber and Bruner, 1932, Journ. Dept. Agr. Puerto Rico 16: 246.

Length 7.70–8.00 mm. This is a much larger species than *cinctipes* and easily distinguished from all other species of the genus by the much longer, hornlike, anterolateral tooth of the pronotum which is extended well beyond outer margin of eye; the enlarged bluntly rounded prehumeral process which projects well beyond humeral margin and especially by the much longer rostrum which extends beyond the metasternal coxae. Outline of head and pronotum as shown in figure 17.

Hypopygium, hypopygial appendage and clasper as in Figs. 52, 54, 53.

Type: Male, Edgewater, Florida, February 28, 1939, C. A. Frost, U.S.N.M. type no. 61522. Paratypes, males and females: Edgewater, Fla., same data as type; Haulover, Fla., March, Hubbard and Schwarz; Paradise Key, Fla., February 23, 1919, H. S. Barber; Georgia, 8 specimens, no data, colln. P. R. Uhler, U.S.N.M.; Lake Placid, Fla., July 13, 1948, R. H. Beamer (U.K.S.M.); Gueydan, Louisiana, June 26, 1925, at light, E. Kalmbach, Patuxent Fish and Wildlife Refuge Laboratory, through R. T. Mitchell.

This is the species which has been misidentified as *dubius* by several authors, but comparison with Palisot de Beauvois's figure 6 on plate 5 indicates very clearly that this is an error. (See Fig. 1.)

Van Duzee (1904, Trans. Amer. Ent. Soc. **30**: 77) reports a pair taken at Fortress Monroe, Va. As these specimens are no longer in the collection of the U. S. National Museum, it is impossible to confirm this record.